

16 to 22 February, 2014 (Week 08)

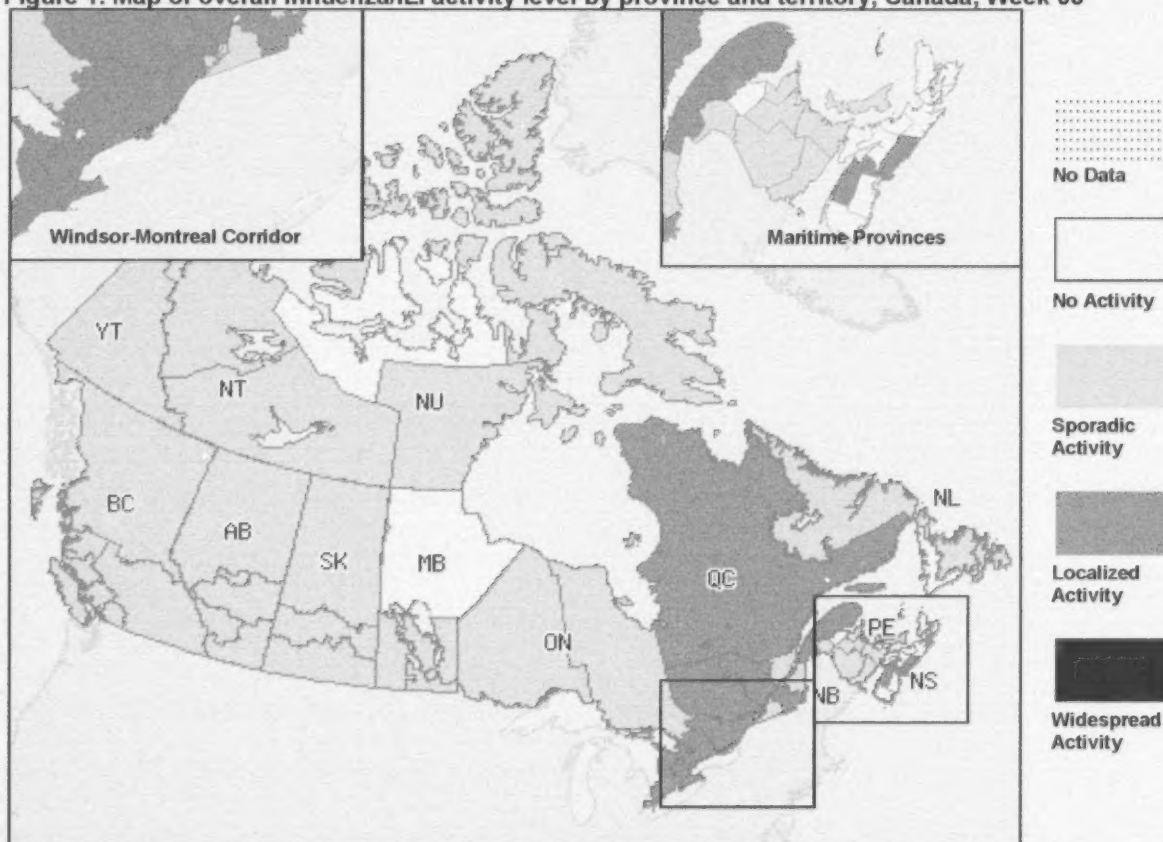
Overall Summary

- In week 08, overall influenza activity continued to decrease in Canada except in the eastern provinces which experienced a later start to the influenza season.
- The influenza A(H1N1) virus remains the most common influenza virus circulating this season although influenza B virus detections continue to increase.
- Adults 20-64 years of age continue to be more affected by influenza this season. However, the increasing circulation of influenza B may result in greater impact on older adults and children in the coming weeks.
- To week 08, 3,093 hospitalizations and 171 deaths have been reported, which is fewer than were reported during the same period last season.
- Overall influenza activity in Canada during the 2013-14 season has been similar to the 2012-13 season and is within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

In week 08, influenza activity levels continued to decline. No regions reported widespread activity and ten regions in eastern Canada (ON(5), QC(3) and NS(2)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 08

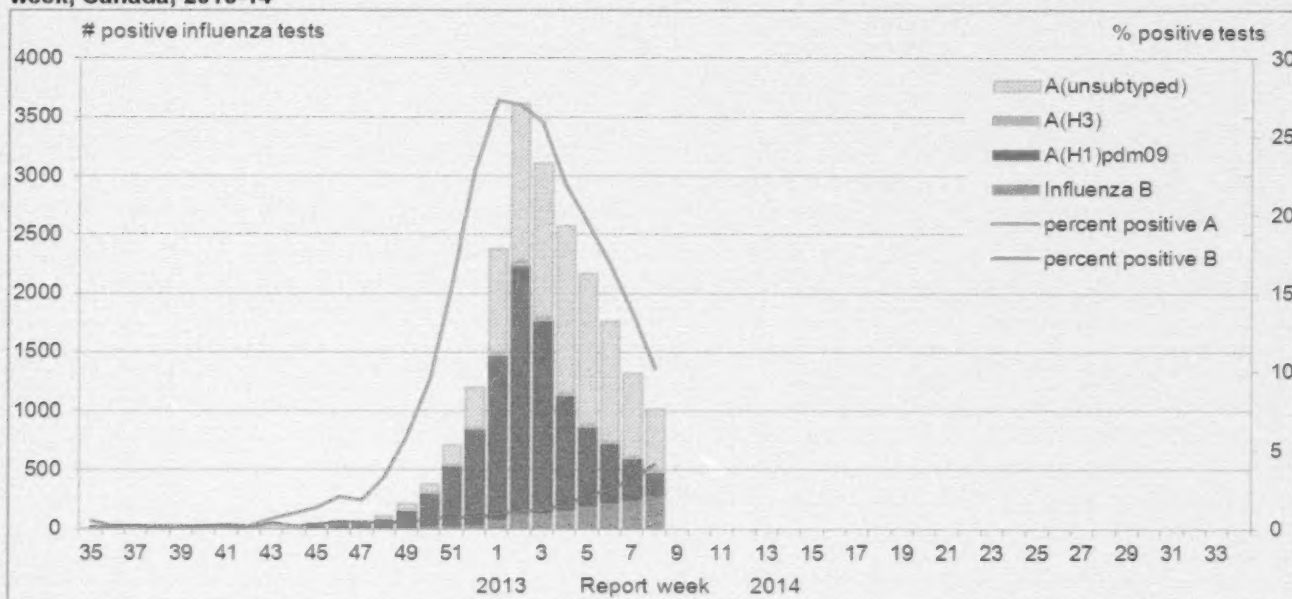


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the [FluWatch website](#).

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests continued to decrease, from 1,315 in week 07 to 1,014 in week 08. The percentage of positive influenza tests decreased from 16.9% to 14.3% (Figure 2). Laboratory detections continue to follow a similar trend to the 2012-13 season, despite the difference in the predominant circulating virus. Cumulative influenza virus detections to date remain predominantly influenza A (92%), and among those subtyped, 97% (9,724/10,060) were A(H1N1)pdm09. However, the percentage of positive tests for influenza B has been rising slowly in recent weeks to 28.7% of influenza detections in week 08 (Table 1). A similar late-season wave of influenza B was observed during the 2012-13 and 2010-11 influenza seasons. Among the 16,968 cases for which information on age and type/subtype has been received this season, 56.1% were 20-64 years of age (Table 2).

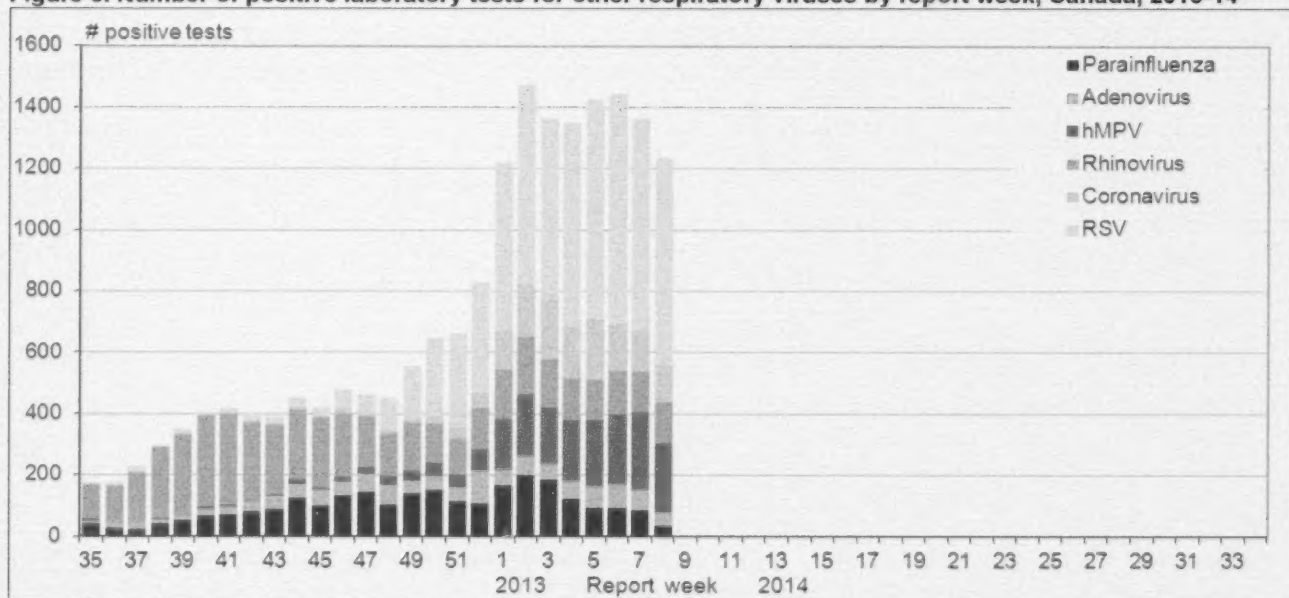
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The percentages of positive tests for RSV, human metapneumovirus and rhinovirus have been increasing over recent weeks. The percentage of positive tests for coronavirus and parainfluenza have been declining (Figure 3).

For more details, see the weekly [Respiratory Virus Detections in Canada Report](#).

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces ¹	Weekly (February 16 to 22, 2014)					Cumulative (August 25, 2013 to February 22, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)		A Total	A(H1)pdm09	A(H3)	A(UnS)	
BC	80	43	8	29	12	1687	1526	51	110	77
AB	75	35	3	37	7	3542	3265	42	235	90
SK	17	11	0	6	3	1317	950	4	363	24
MB	31	29	0	2	0	538	378	1	159	15
ON	98	19	14	65	80	5248	2305	230	2713	305
QC	323	37	0	286	178	4807	616	3	4188	1038
NB	71	0	0	71	2	1418	364	1	1053	10
NS	14	11	0	3	0	129	102	4	23	1
PE	7	6	0	1	0	115	114	0	1	0
NL	7	0	0	7	9	324	104	0	220	123
Canada	723	191	25	507	291	19125	9724	336	9065	1683
Percentage ²	71.3%	26.4%	3.5%	70.1%	28.7%	91.9%	50.8%	1.8%	47.4%	8.1%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting³, Canada, 2013-14

Age groups (years)	Weekly (February 16 to 22, 2014)					Cumulative (August 25, 2013 to February 22, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	102	24	2	76	20	2936	1324	23	1589	173	3109	18.3%
5-19	32	7	0	25	30	1216	654	18	544	261	1477	8.7%
20-44	109	24	1	84	48	4729	2581	33	2115	305	5034	29.7%
45-64	102	20	0	82	44	4102	2215	37	1850	389	4491	26.5%
65+	96	21	3	72	58	2211	900	88	1223	519	2730	16.1%
Unknown	7	0	5	2	1	125	98	14	13	2	127	0.7%
Total	448	96	11	341	201	15319	7772	213	7334	1649	16968	100.0%
Percentage ²	69.0%	21.4%	2.5%	76.1%	31.0%	90.3%	50.7%	1.4%	47.9%	9.7%		

¹ Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.

² Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

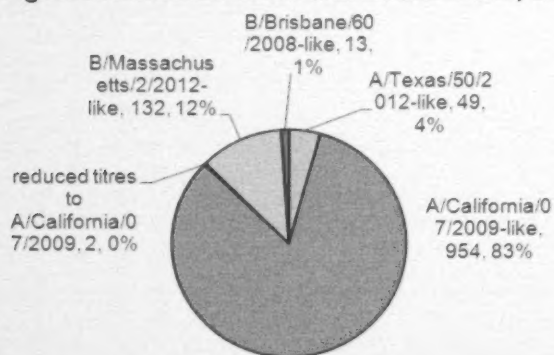
³ Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.

UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1150 influenza viruses [49 A(H3N2), 956 A(H1N1)pdm09 and 145 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Eleven influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1150



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 774 influenza viruses for resistance to oseltamivir and 772 viruses for resistance to zanamivir, and all were sensitive. All 939 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

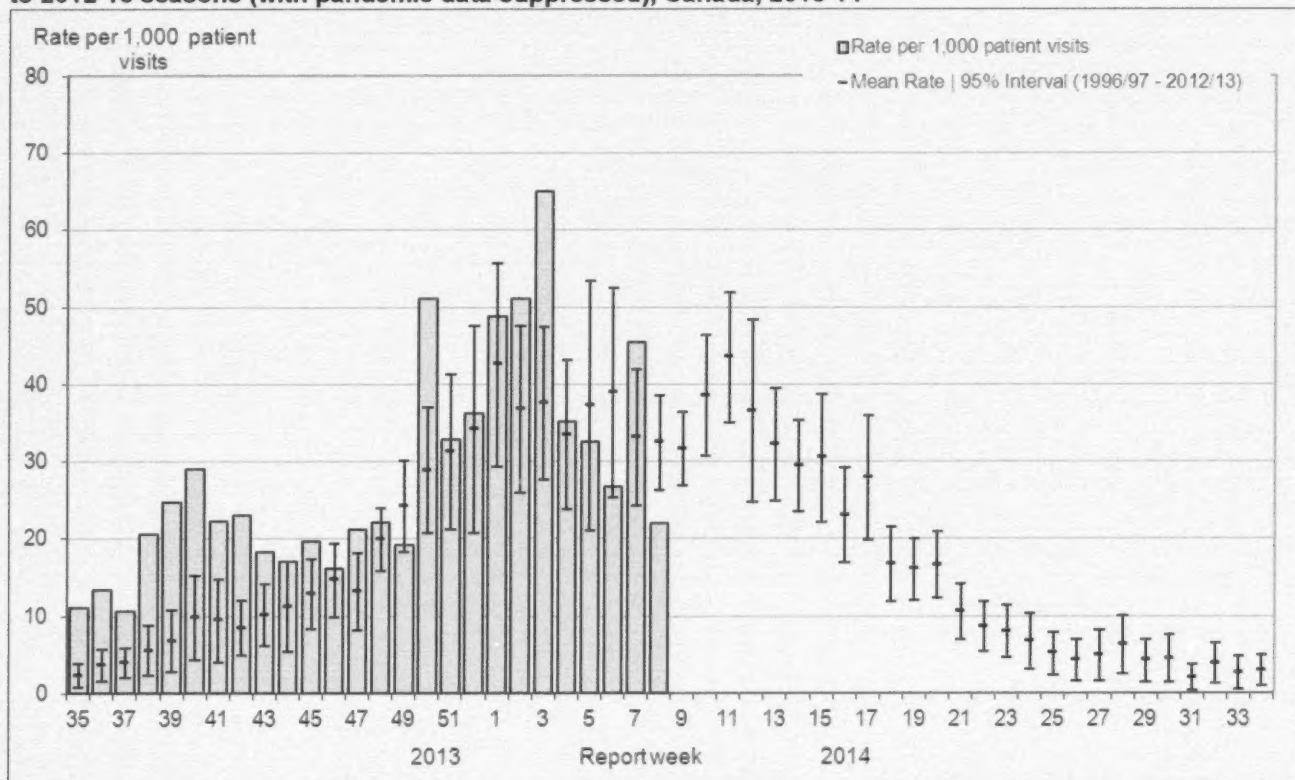
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	45	0	45	0	74	74 (100%)
A (H1N1)	654	0	652	0	865	865 (100%)
B	75	0	75	0	NA ¹	NA ¹
TOTAL	774	0	772	0	939	939 (100%)

¹ NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 45.4/1,000 in week 07 to 22.0/1,000 in week 08; which is below the expected range for week 08 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

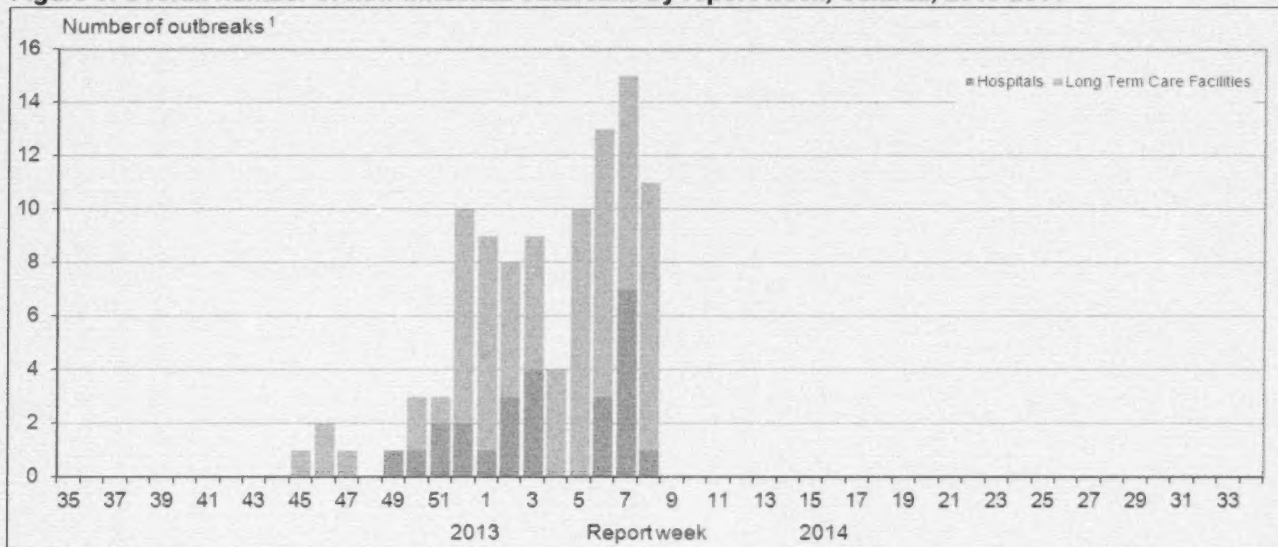


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 08, 11 new influenza outbreaks were reported: one in a hospital and ten in long-term care facilities (Figure 6). In addition, five outbreaks of influenza-like-illness were reported: four in schools and one in another facility or community.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

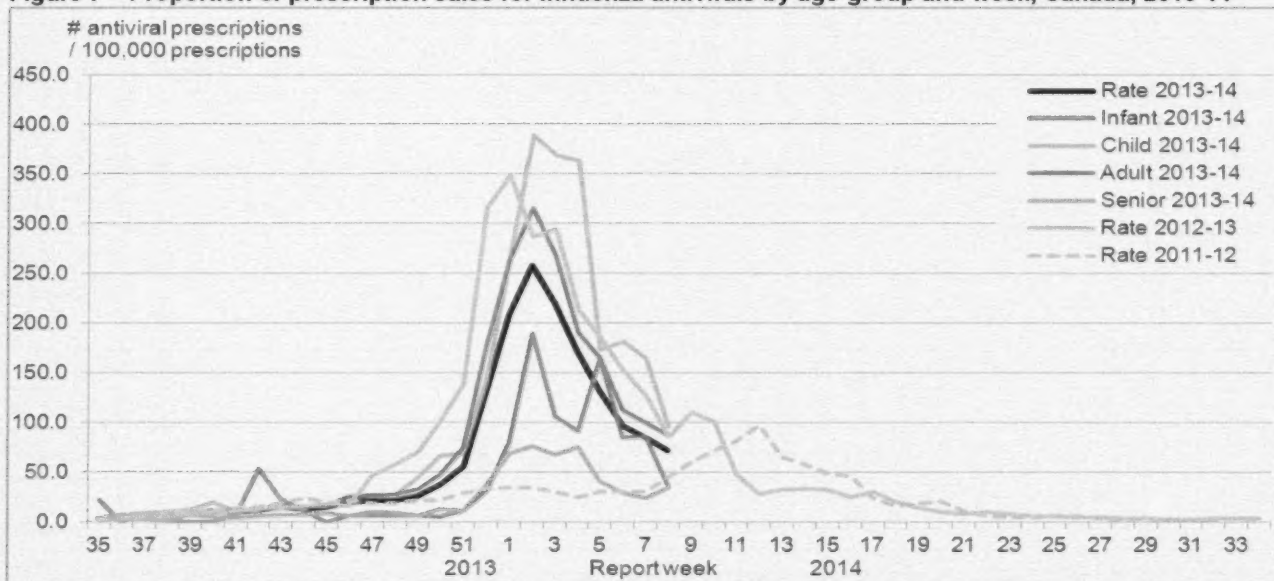


¹All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 08, the proportion of prescriptions for influenza antivirals continued to decrease, following the downward trend in laboratory detections of influenza. The largest proportion of prescriptions for antivirals continued to be among children 2-18 years of age followed by adults 19-64 years of age (Figure 7). Within these age-groups, higher proportions of prescriptions for antivirals were observed among children >5 years of age and adults <45 years of age.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y, Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 08, 28 new laboratory-confirmed influenza-associated paediatric (≤ 16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 42 in week 07. In week 08, influenza A was reported in 17 cases and influenza B in 11 cases. An increasing number of influenza B cases have been reported in the past two weeks (Figure 8a). Twenty-two (79%) of the cases in week 08 were ≥ 2 years of age. Two ICU admissions were reported in week 08, one 5-9 years of age and one 10-16 years of age. No deaths were reported.

To date this season, a total of 520 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 92% of which have been influenza A, and almost all of those subtyped (98%) were A(H1N1)pdm09. Children ≥ 2 years of age represent 54.6% of cases to date (Table 4). Seventy-nine ICU admissions have been reported, of which 46 (58%) were children ≥ 2 years of age (Figure 9a). Among the 76 ICU admission for which the influenza type reported, all but four were cases with influenza A, and 96% of those subtyped were A(H1N1)pdm09. Among the 65 ICU cases with available data, 44 (68%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 08, 27 new laboratory-confirmed influenza-associated adult (≥ 16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 45 in week 07. There has been a steady decline in the number of new cases over recent weeks. Among cases in week 08, 22 (81.5%) were influenza A, and four were influenza B (Figure 8b). The majority of hospitalizations occurred among adults ≥ 45 years of age (20; 74%). Three ICU admissions were reported in week 08, all 45-64 years of age with influenza A. No deaths were reported in week 08.

To date this season, 1030 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 980 (95.1%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 180 hospitalizations, all but five of which were cases with influenza A (102 A(H1N1)pdm09, three A(H3N2) and 70 A(unknown)). More than three quarters of hospitalizations and approximately 80% of ICU admissions were ≥ 45 years of age. Of the 152 ICU admissions with available information, 133 (87.5%) were reported to have at least one comorbidity and of the 155 ICU admissions with available information 112 (72.3%) reported not having been vaccinated this season. Fifty-one deaths have been reported, all but one with influenza A (32 A(H1N1)pdm09, one A(H3N2) and 17 A(unknown)); five cases 20-44 years of age, 26 cases 45-64 years of age and 20 cases ≥ 65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

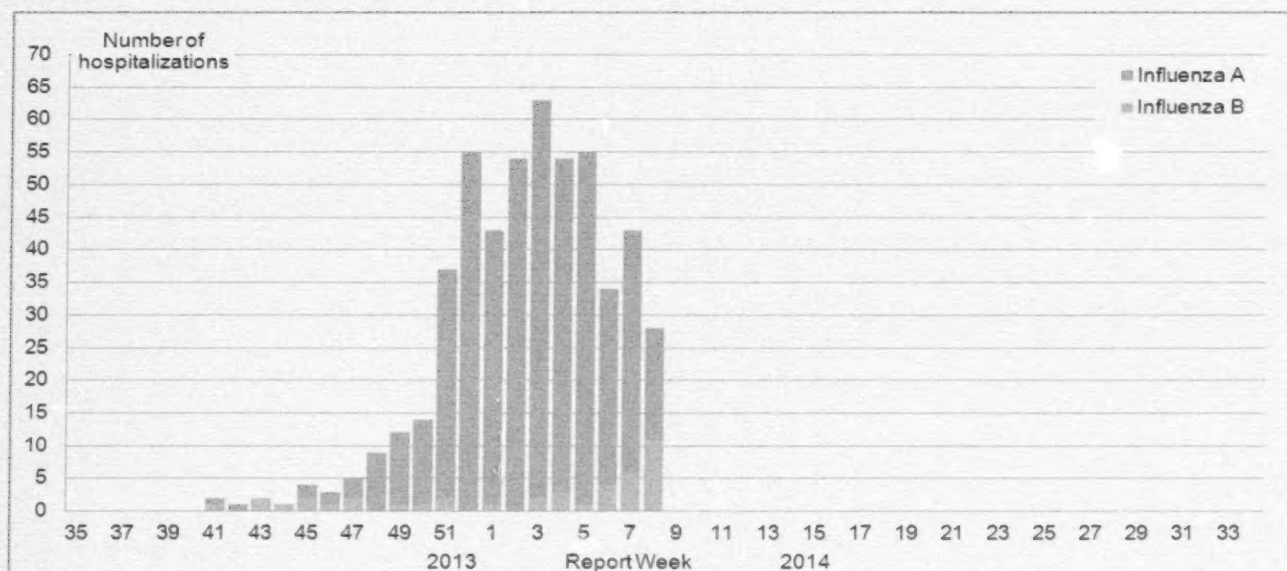
Age groups	Cumulative (25 Aug. 2013 to 22 Feb. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	92	27	0	65	2	94 (18%)
6-23m	137	38	1	98	5	142 (27%)
2-4y	146	46	2	98	14	160 (31%)
5-9y	73	22	0	51	17	90 (17%)
10-16y	31	13	0	18	3	34 (7%)
Total	479	146	3	330	41	520
% ¹	92.1%	30.5%	0.6%	68.9%	7.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

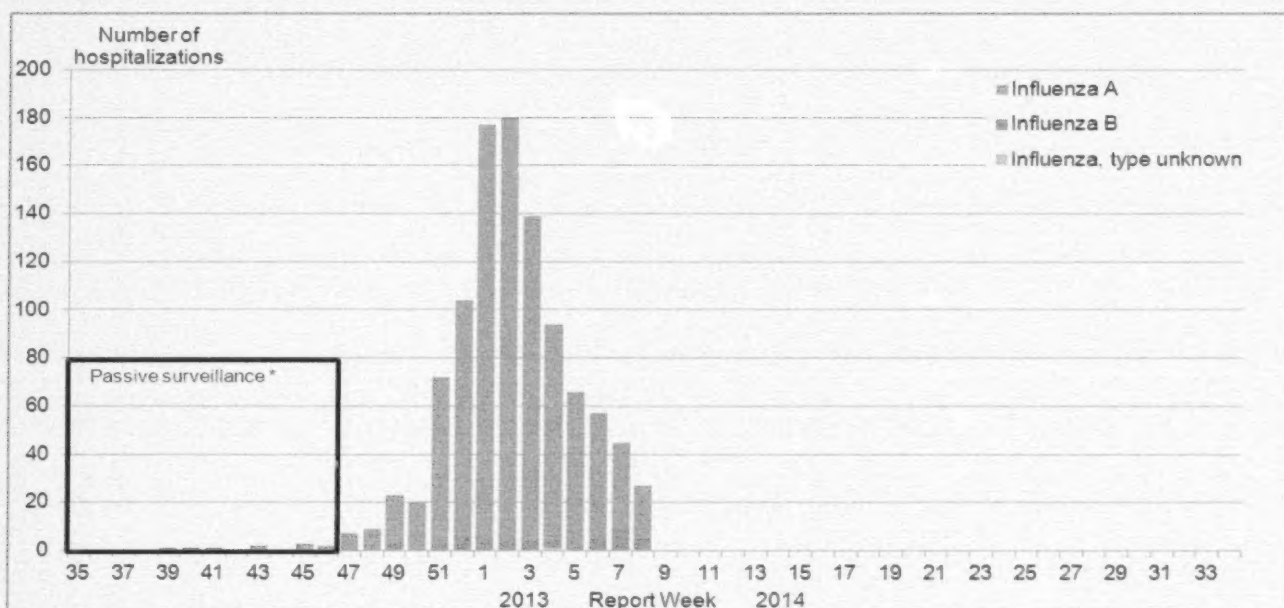
Age groups (years)	Cumulative (25 Aug. 2013 to 22 Feb. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	11	3	0	8	1	12 (1%)
20-44	218	117	3	98	3	221 (22%)
45-64	395	182	4	209	10	405 (40%)
65+	352	178	22	152	35	387 (38%)
Total	976	480	29	467	49	1025
% ¹	95%	49%	3%	48%	5%	100%

¹ Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtype: The specimen was typed as influenza A, but no result for subtyping was available. * One case for which the influenza type has not yet been reported, and four cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



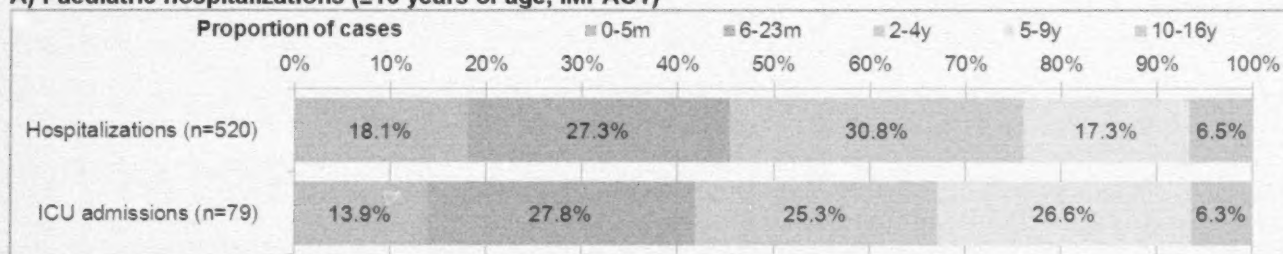
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



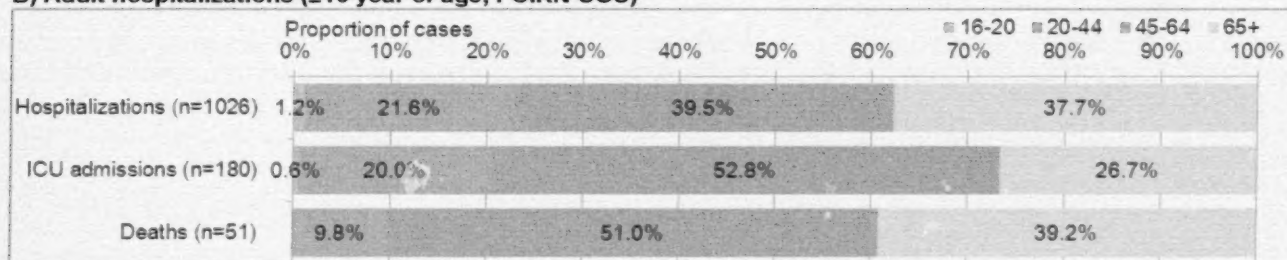
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 08, 119 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (103, 86.6%), of which 36 (35.0%) were A(H1N1)pdm09, one (1.0%) was A(H3N2), and 66 (64.1%) were A(unknown). Seven of the eight ICU admissions reported in week 08 included age information, of which six were adults 20-64 years of age. Thirteen deaths were reported, 11 of which were adults ≥45 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,093 influenza-associated hospitalizations have been reported, 96.8% with influenza A. The majority (57.5%) of hospitalizations have been cases 45 years of age or older (Table 6). A total of 298 ICU admissions have been reported this season, of which 67.4% were among adults 20-64 years of age. A total of 171 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (52.6%), followed by adults ≥65 years of age (38.0%). Influenza B has been detected infrequently among severe cases of influenza to date this season: in only 3.2% of hospitalizations, 1.0% of ICU admissions, and 4.1 % of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 22 Feb. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	515	259	6	250	19	534 (17%)
5-14	112	57	5	50	11	123 (4%)
15-19	28	17	2	9	1	29 (1%)
20-44	525	377	3	145	6	531 (17%)
45-64	965	626	16	323	17	982 (32%)
65+	750	402	46	302	45	795 (26%)
Unknown	98	78	3	17	1	99 (3%)
Total	2993	1816	81	1096	100	3093
Percentage¹	96.8%	60.7%	2.7%	36.6%	3.2%	100%

¹ Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

UnS: unsubtype: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on [Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14](#) on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Twelve new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report, along with 49 deaths that were previously unreported. Globally to February 27, 2014, the WHO has been informed of a total of 372 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 116 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Two new laboratory-confirmed cases of MERS-CoV, with one resulting in death, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 184 laboratory-confirmed cases of infection with MERS-CoV, including 80 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: <http://www.phac-aspc.gc.ca/fluwatch/index.html>.

Ce rapport est disponible dans les deux langues officielles.